## Overview

The SITRANS LR250 Hygienic Encapsulated Antenna is a 2-wire 25 GHz pulse radar level transmitter with sanitary and hygienic approvals for continuous monitoring of liquids, slurries, and pastes within the food, beverage, chemical, and pharmaceutical industries to a range of 20 m (66 ft) (antenna dependent).

Picture shown with accessories sold separately.

## Benefits

- Fully encapsulated horn antenna design with FDA approved and USP Class VI compliant, TFM 1600 PTFE lens
- < 0.8 μ Ra surface finish for maximum cleanability and hygiene requirements commonly required in sanitary environments
- Chemically resistant TFM 1600 PTFE lens is also suitable for aggressive or corrosive materials
- Approved device in accordance with 3-A, EHEDG EL Class I and/or EHEDG EL Aseptic Class I
- Cost effective replacement for transmitters made of exotic materials
- Graphical local user interface (LUI) makes operation simple with plug-and-play set-up using the intuitive Quick Start Wizard
- Industry standard process connections including ISO 2852, DIN 11851, DIN 11864-1, DIN 11864-2, DIN 11864-3, and Tuchenhagen Varivent Type F and N
- LUI displays echo profiles for diagnostic support
- 25 GHz high frequency and 2 inch (50 mm) process connection/antenna allow for easy mounting
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Communication using HART, PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools, such as PACTware or Fieldcare via SITRANS DTM.
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511

## Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves set-up and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller antenna options and decreasing sensitivity to obstructions.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly in small vessels and in tanks/vessels up to 20 m (66 ft) on materials with dk > 1.6.

- Key Applications: applications within the food, beverage, chemical and pharmaceutical industries where sanitary, aseptic, or hygienic approvals are required or easy install/clean flush antennas are preferable, such as ice cream, fruit juice, milk, beer, and pharmaceutical or chemical additives and ingredients.
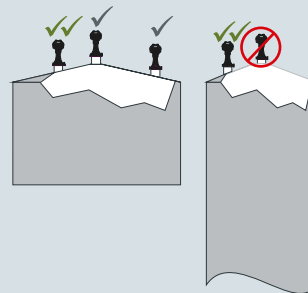
## Configuration
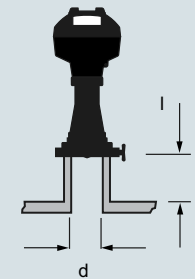
**Installation**

**Note:**
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.

3"/DN 80/80A or larger

9.6°
12.8°
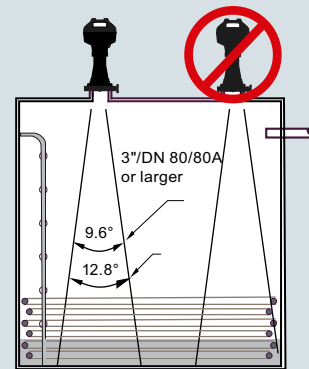
**Mounting on vessel**

**Mounting on a nozzle**

Nozzles should be maximum l/d ratio 1:1 (Eg. 50 mm length, 50 mm diameter)

LR250 Hygienic Encapsulated Antenna, dimensions in mm (inch)

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## Level Measurement
Continuous level measurement
Radar transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

■ **Technical specifications**

| Mode of Operation | |
|---|---|
| Measuring principle | Radar level measurement |
| Frequency | K-band (25.0 GHz) |
| Minimum measuring range | 50 mm (2 inch) from end of antenna |
| Maximum measuring range | 20 m (66 ft) |

| Output | |
|---|---|
| HART | Version 5.1 |
| • Analog output | 4 ... 20 mA |
| • Accuracy | ± 0.02 mA |
| • Fail-safe | • Programmable as high low or hold (loss of echo)<br>• NE 43 programmable |
| PROFIBUS PA | Profile 3.01 |
| • Function blocks | 2 Analog Input (AI) |
| FOUNDATION Fieldbus | H1 |
| • Functionality | Basic or LAS |
| • Version | ITK 5.2.0 |
| • Function blocks | 2 Analog Input (AI) |

| Performance (according to reference conditions IEC60770-1) | |
|---|---|
| Maximum measured error | • > 500 mm from sensor reference point: 3 mm (0.118 inch)<br>• < 500 mm from sensor reference point: 25 mm (1 inch) |
| Influence of ambient temperature | < 0.003 %/K |

| Rated operating conditions | |
|---|---|
| Installation conditions | |
| • Location | Indoor/outdoor |
| Ambient conditions (enclosure) | |
| • Ambient temperature | -40 ... +80 °C (-40 ... +176 °F) |
| • Installation category | I |
| • Pollution degree | 4 |

| Medium conditions | |
|---|---|
| Dielectric constant $\varepsilon_r$ | ≥ 1.6 (antenna dependent) |
| Process temperature | -40 ... +170 °C (-40 ... +338 °F) at process connection |
| Process pressure | See Pressure/Temperature curves for more information |

| Design | |
|---|---|
| Enclosure | |
| • Material | Aluminum, polyester powder coated |
| • Cable inlet | 2 x M20 x 1.5 or 2 x ½" NPT |
| Degree of protection | Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68 |
| Weight (dependent on process connection) | • Approx. 4.7 kg (10.4 lb) for 2" ISO 2852 (smallest size)<br>• Approx. 7.9 kg (17.4 lb) for DN 100 DIN 11864-2 (largest size) |
| Display (local) | Graphic local user interface including quick start wizard and echo profile display |
| Antenna | |
| • Material | Stainless steel 316L (1.4435 or 1.4404) and TFM 1600 PTFE Lens (lens is the only wetted part) |
| • Lens surface finish ($R_a$) | 0.8 μm |

| Process connections | |
|---|---|
| Hygienic/Sanitary connections | • 2", 3" & 4" Sanitary Clamp according to ISO 2852<br>• DN 50, DN 80 & DN 100 Aseptic/Hygienic threaded to DIN 11864-1 [Form A]<br>• DN 50, DN 80 & DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]<br>• DN 50, DN 80 & DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]<br>• DN 50, DN 80 & DN 100 Hygienic Union according to DIN 11851<br>• Type F (50 mm) & Type N (68 mm) Tuchenhagen Varivent |

| Power supply | |
|---|---|
| 4 ... 20 mA/HART | Nominal 24 V DC (max. 30 V DC) with max. 550 Ω |
| PROFIBUS PA | • 15 mA<br>• Per IEC 61158-2 |
| FOUNDATION Fieldbus | • 20.0 mA<br>• Per IEC 61158-2 |

| Certificates and approvals | |
|---|---|
| General | CSA$_{US/C}$, CE, FM, RCM |
| Radio | FCC, Industry Canada, RED, RCM |
| Hazardous | |
| • Explosion Proof (Brazil) | INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da |
| • Increased Safety (Brazil) | INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da |
| • Intrinsically Safe (Brazil) | INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da |
| • Explosion Proof (Canada/USA) | CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4 |
| • Intrinsically Safe (Canada/USA) | CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4 |
| • Non-incendive (Canada/USA) | CSA/FM Class I, Div. 2, Groups A, B, C, D T5 |
| • Flame Proof/Increased Safety (China) | NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C |
| • Intrinsically Safe (China) | NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C |
| • Non-sparking (China) | NEPSI Ex nA IIC T4 Gc |
| • Intrinsically Safe (Europe) | ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia ta IIIC T100 °C Da |
| • Non-sparking (Europe) | ATEX II 3G Ex nA IIC T4 Gc |
| • Flame Proof (International/Europe) | IECEx/ATEX II 1/2 GD, 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da |
| • Increased Safety (International/Europe) | IECEx/ATEX II 1/2 GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da |
| • Intrinsically Safe (International) | IECEx/ATEX II 1 G Ex ia IIC T4 Ga, IECEx/ATEX II 1D Ex ia ta IIIC T100 °C Da |
| • Explosion Proof (Russia/Kazakhstan) | EAC Ex d |
| • Increased Safety (Russia/Kazakhstan) | EAC Ex e |
| • Intrinsically Safe (Russia/Kazakhstan) | EAC Ex ia |
| Hygienic/Sanitary | EHEDG EL Class I |
| | EHEDG EL Aseptic Class I |

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**Programming**

| | |
|---|---|
| Intrinsically Safe Siemens handheld programmer | Infrared receiver |
| • Approvals for handheld programmer | IS model: |
| | ATEX II 1 GD Ex ia IIC T4 Ga |
| | Ex ia D 20 T135 °C |
| | Ta = -20 ... +50 °C |
| | CSA/FM Class I, II, III, Div. 1, |
| | Groups A, B, C, D, E, F, G, T6 |
| | $T_a$ = 50 °C |
| | IECEx SIR 09.0073 |
| Handheld communicator | HART communicator 375/475 |
| PC | • SIMATIC PDM<br>• Emerson AMS<br>• SITRANS DTM (for connection into FDT, such as PACTware or Field-care) |
| Display (local) | Graphic local user interface including quick start wizard and echo profile displays |

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# Level Measurement
## Continuous level measurement
## Radar transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna**

| Selection and Ordering data | Article No. |
|---|---|
| **SITRANS LR250 hygienic encapsulated antenna** ↗ | **7ML5433-** |
| 2-wire, 25 Ghz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, up to a range of 20 m (66 ft) (Antenna dependant). Ideal for Hygienic applications including small vessels and low dielectric media. | ■■■■ 0 - ■ A ■ ■ |
| ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | |

| **Hygienic/Sanitary Approvals** | |
|---|---|
| EHEDG EL Class I [1] | 1 |
| EHEDG EL Aseptic Class I [1] | 2 |
| 3-A (Tuchenhagen connections only - FC ... FF) [2][3] | 3 |
| EHEDG EL Class I & 3-A (excludes Tuchenhagen connections) [2][4] | 4 |

| **Process Connection Types (all types have TFM1600 PTFE lens)** | |
|---|---|
| 316L st/st [1.4435 or 1.4404] | |
| 2" Sanitary Clamp according to ISO 2852 [5] | A A |
| 3" Sanitary Clamp according to ISO 2852 | A B |
| 4" Sanitary Clamp according to ISO 2852 | A C |
| 316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301) | |
| DN 50 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] [5] | B A |
| DN 80 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] | B B |
| DN 100 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] | B C |
| 316L st/st [1.4435 or 1.4404] | |
| DN 50 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] [5] | C A |
| DN 80 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] | C B |
| DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] | C C |
| 316L st/st [1.4435 or 1.4404] | |
| DN 50 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] [5] | D A |
| DN 80 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] | D B |
| DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] | D C |
| 316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301) | |
| DN 50 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 [5] | E A |
| DN 80 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 | E B |
| DN 100 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 | E C |

| Selection and Ordering data | Article No. |
|---|---|
| **SITRANS LR250 hygienic encapsulated antenna** | **7ML5433-** |
| 2-wire, 25 Ghz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, up to a range of 20 m (66 ft) (Antenna dependant). Ideal for Hygienic applications including small vessels and low dielectric media. | ■■■■ 0 - ■ A ■ ■ |
| 316L st/st [1.4435 or 1.4404] | |
| Type F (50 mm) Tuchenhagen Varivent (EHEDG only) [5] | F A |
| Type N (68 mm) Tuchenhagen Varivent (EHEDG only) [5] | F B |
| Type F (50 mm) Tuchenhagen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F )] [5] | F C |
| Type N (68 mm) Tuchenhagen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F)] [5] | F D |
| Type F (50 mm) Tuchenhagen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)] [5] | F E |
| Type N (68 mm) Tuchenhagen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)] [5] | F F |

| **Communication** | |
|---|---|
| PROFIBUS PA | 1 |
| 4 ... 20 mA HART, start-up at < 3.6 mA | 2 |
| FOUNDATION Fieldbus | 3 |

| **Enclosure (with Cable Inlets)** | |
|---|---|
| Aluminum, Epoxy paint, 2 X ½" NPT | 0 |
| Aluminum, Epoxy paint, 2 X M20 x 1.5 | 1 |

| **Approvals** | |
|---|---|
| General Purpose, CE, CSA, FM, FCC, RED, RCM | A |
| Intrinsically Safe: CSA/FM Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4 FCC, Industry Canada | B |
| Intrinsically Safe: IECEx/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, CE, RED, RCM | C |
| Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D T5, FCC, Industry Canada | D |
| Non Sparking: ATEX II 3G Ex nA IIC T4 Gc, CE, RED, RCM | E |
| Increased Safety: IECEx/ATEX II 1/2 GD, 1D, 2D Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM [6] | F |
| Flameproof: IECEx/ATEX II 1/2 GD 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM [6] | G |
| Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada [6] | H |
| Non Sparking: NEPSI Ex nA IIC T4 Gc | K |
| Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C | L |
| Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C [6] | M |
| Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C [6] | N |

| **Pressure Rating** | |
|---|---|
| Rating per pressure/temperature curves in instruction manual | 0 |

| Selection and Ordering data | Order code |
|---|---|
| ***Further designs*** | |
| Please add "**-Z**" to Article No. and specify Order code(s). | |
| Electrical Connection cable entry: | |
| Plug M12 (IP 67 rating) with mating connector[2)7)8)] | **A50** |
| Plug 7/8" (IP 67 rating) with mating Connector[2)8)9)] | **A55** |
| Test Certificates | |
| Manufacturer's Test Certificate M to DIN 55350, Part 18 and to ISO 9000 | **C11** |
| Material inspection Certificate 3.1 of EN 10204 | **C12** |
| Functional Safety | |
| Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511[6)10)] | **C20** |
| Namur | |
| Namur NE43 compliant, device preset to failsafe < 3.6 mA[6)] | **N07** |
| Tagging | |
| Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)] | |
| Measuring-point number / identification (max. 27 characters) specify in plain text | **Y15** |

| Compact Operating Instructions for HART/ mA device | Article No. |
|---|---|
| English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish | **A5E33469191** |
| English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian | **A5E33469171** |
| English, Portuguese (Brazil), Chinese | **A5E34046583** |
| Note: The Operating Instructions should be ordered as a separate line item on the order. | |
| All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation | |

| Compact Operating Instructions for PROFIBUS PA device | |
|---|---|
| English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish | **A5E33469239** |
| English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian | **A5E33472685** |
| English, Portuguese (Brazil), Chinese | **A5E34046624** |
| Note: The Operating Instructions should be ordered as a separate line item on the order. | |
| All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation | |

| Selection and Ordering data | Article No. |
|---|---|
| ***Compact Operating Instructions for FOUNDATION Fieldbus device*** | |
| English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish | **A5E33472700** |
| English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian | **A5E33472738** |
| English, Portuguese (Brazil), Chinese | **A5E34046626** |
| Note: The Operating Instructions should be ordered as a separate line item on the order. | |
| All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation | |
| ***Other Operating Instructions*** | |
| SITRANS LR250 Functional Safety manual, English | **A5E32286471** |
| Note: The Operating Instructions should be ordered as a separate line item on the order. | |
| All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation | |
| ***Accessories*** | |
| Handheld programmer, Intrinsically safe, EEx ia (LUI enabled) | **7ML1930-1BK** |
| HART modem/USB (for use with a PC and SIMATIC PDM) | **7MF4997-1DB** |
| One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required)[6)] | **7ML1930-1AP** |
| One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required)[8)] | **7ML1930-1AQ** |
| SITRANS RD100, loop powered display - see Chapter 7 | **7ML5741-...** |
| SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 | **7ML5740-...** |
| SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 | **7ML5744-...** |
| SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7 | **7ML5750-...** |
| For applicable back up point level switch - see point level measurement section | |

[1)] Available with Process connection options AA ... FB only

[2)] Available with Approval options A, B, C, L only

[3)] Available with Process connections FC ... FF only

[4)] Available with Process connection options AA ... EC only

[5)] Max. range 10 m (32.8 ft), dk > 3 [20 m (66 ft) and dk > 1.6 if installed in a stillpipe]

[6)] Applicable with Communication option 2 only

[7)] Available with Enclosure option 1 only

[8)] Available with Communication options 1 and 3 only

[9)] Available with Enclosure option 0 only

[10)] Available with Approval options A, B, C, D, E, K, L only

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# Level Measurement
Continuous level measurement
Radar transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna**

## Characteristic curves

DIN 11851 Sanitary/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100
DIN 11864-1 Aseptic/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100
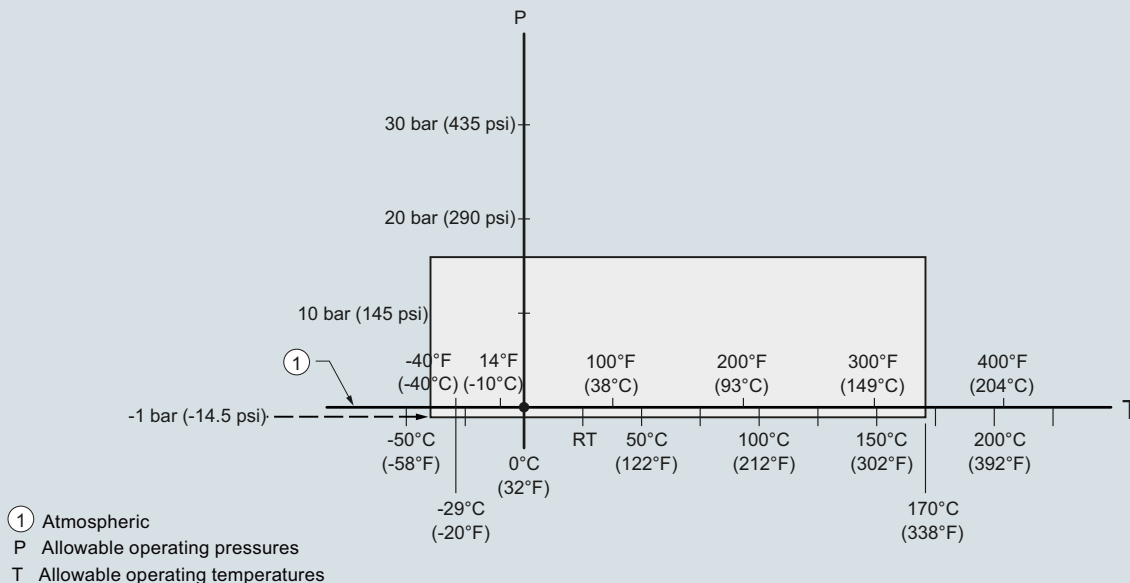


SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

DIN 11864-2 Aseptic/Hygienic flanged: DN 50, DN 80, and DN 100
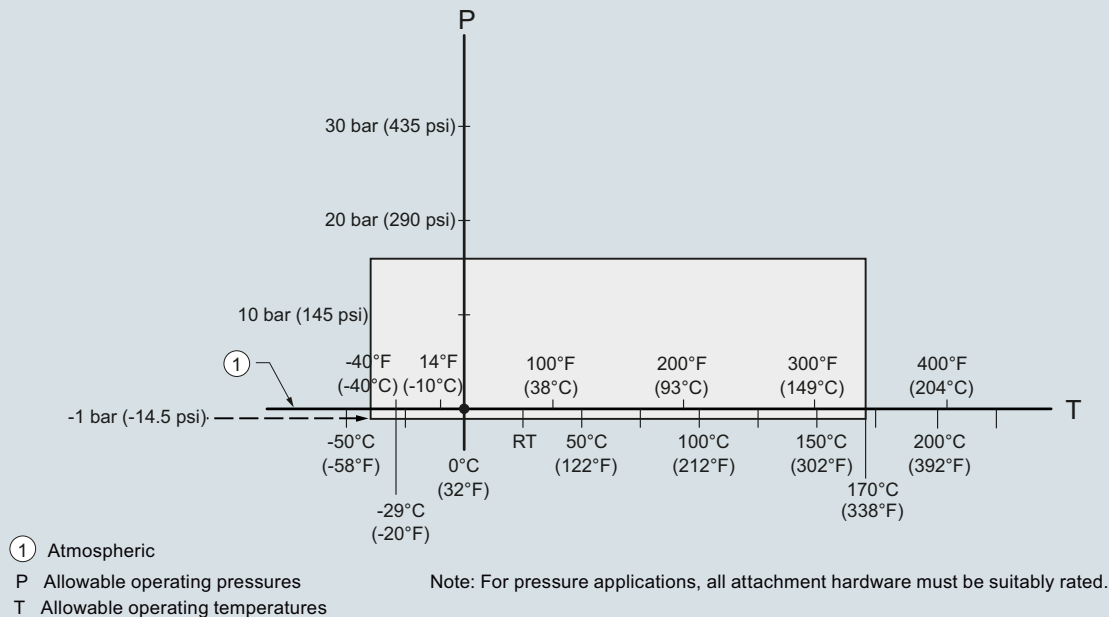


SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

DIN 11864-3 Aseptic/Hygienic clamp: DN 50, DN 80, and DN 100
IS0 2852 Sanitary/Hygienic clamp: 2", 3", and 4"
Tuchenhagen Varivent face seal clamp: Type N (68 mm) and Type F (50 mm)
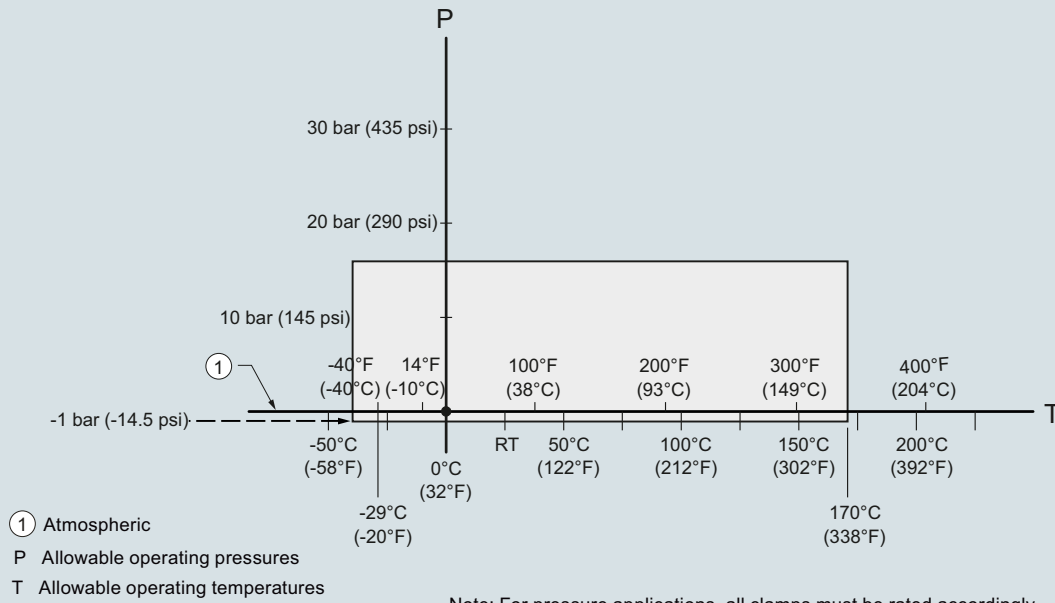


SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

## SITRANS LR250 Hygienic Encapsulated Antenna

### Dimensional drawings

Hygienic encapsulated antenna (2" ISO 2852 sanitary clamp)

50.0 (2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

153.0 (6.02)

Enclosure

178.0 (7.01)

167.0 (6.57)

90.0 (3.54)

Retaining collar

274.2 (10.80)

225.7 (8.89)

Sensor reference point

Process connection

Ø44.0 (1.73)

Ø64.0 (2.52)

11.0 (0.43)

SITRANS LR250 Hygienic Encapsulated Antenna (2" ISO 2852 sanitary clamp), dimensions in mm (inch)

4

**4**

Hygienic encapsulated antenna (3" ISO 2852 sanitary clamp)

50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

90.0
(3.54)

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining collar

343.2
(13.51)

291.2
(11.46)

Process connection

Sensor reference point

14.5
(0.57)

Ø74.7
(2.94)

Ø91.0
(3.58)

SITRANS LR250 Hygienic Encapsulated Antenna (3" ISO 2852 sanitary clamp), dimensions in mm (inch)

# Level Measurement
Continuous level measurement
Radar transmitters

## SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (4" ISO 2852 sanitary clamp)

50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining collar

Process connection

Ø74.7
(2.94)

Ø119.0
(4.69)

167.0
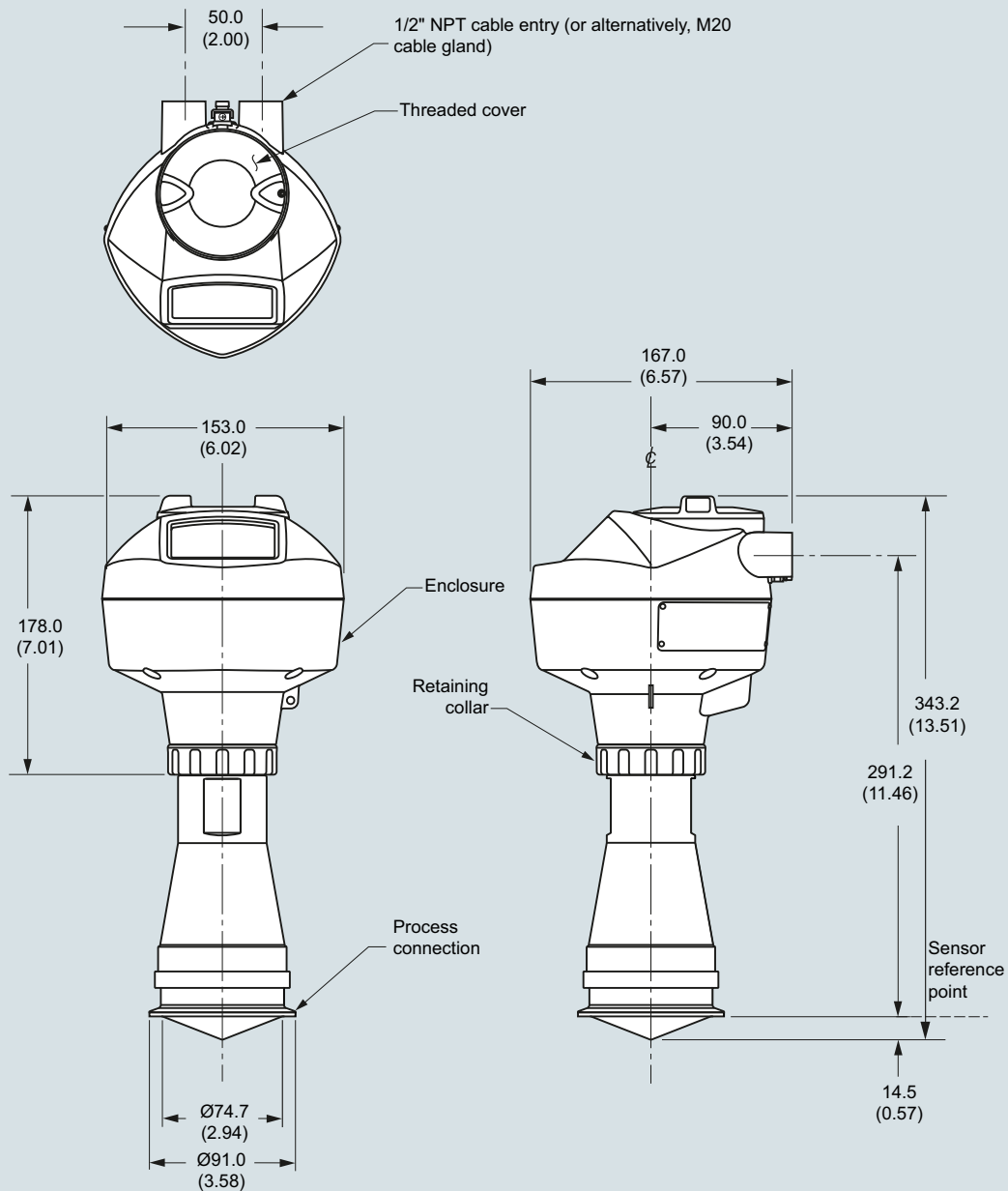(6.57)

90.0
(3.54)

343.2
(13.51)

291.2
(11.46)

Sensor reference point

14.5
(0.57)

SITRANS LR250 Hygienic Encapsulated Antenna (4" ISO 2852 sanitary clamp), dimensions in mm (inch)

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Hygienic encapsulated antenna (DN 50 nozzle/slotted nut to DIN 11851)

50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

90.0
(3.54)

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining collar

Threaded nut

274.2
(10.80)

225.7
(8.89)

Ø44.0
(1.73)

Ø57.6
(2.27)

Ø63.7
(2.51)

Sensor reference point

11.0
(0.43)

Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

## SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 80 nozzle/slotted nut to DIN 11851)

50.0 (2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0 (6.57)

90.0 (3.54)

153.0 (6.02)

Enclosure

178.0 (7.01)

Retaining collar

343.2 (13.51)

291.2 (11.46)

Threaded nut

Sensor reference point

Ø74.7 (2.94)

Ø88.6 (3.49)

Ø94.7 (3.73)

14.5 (0.57)

Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

Hygienic encapsulated antenna (DN 100 nozzle/slotted nut to DIN 11851)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)
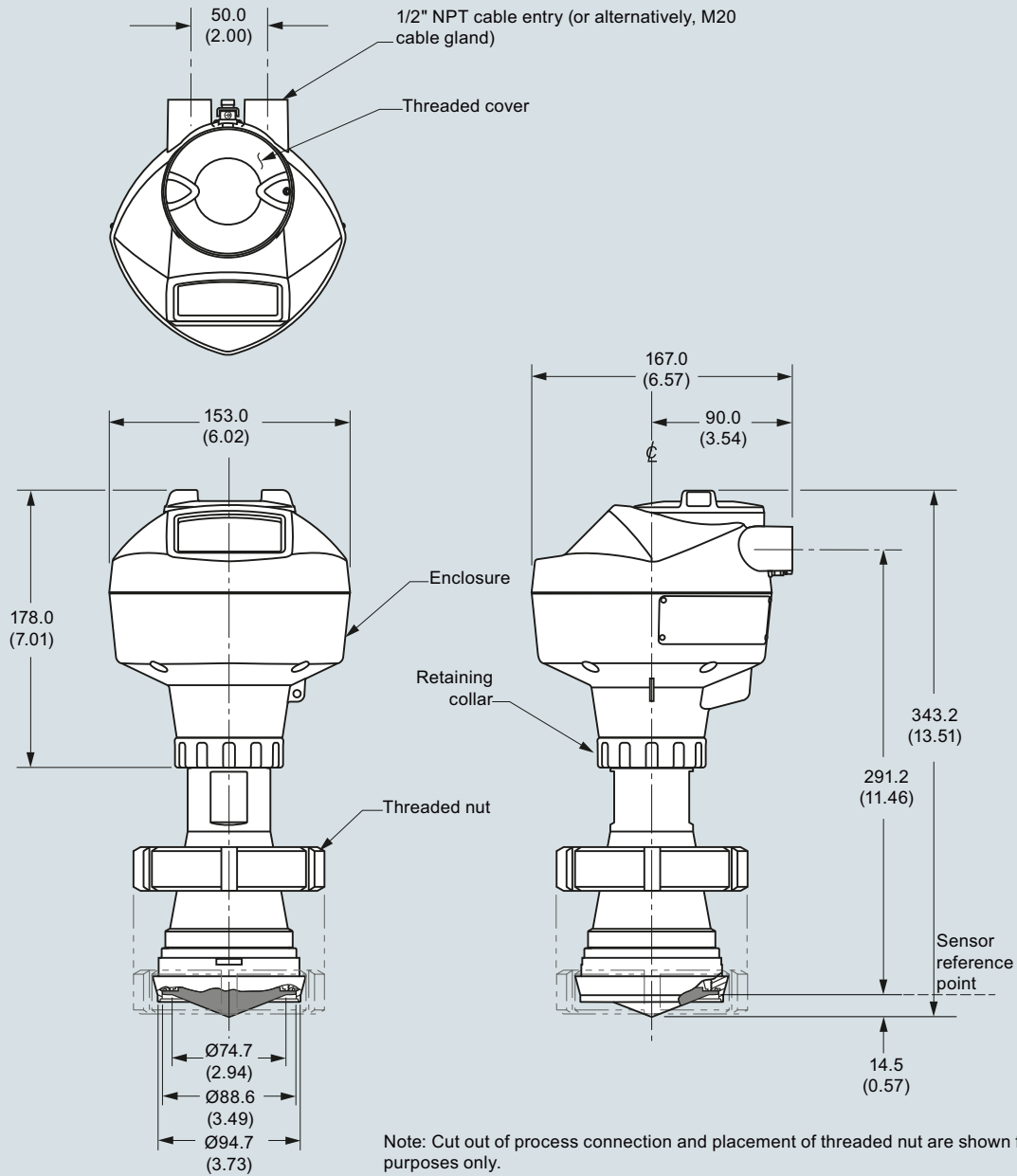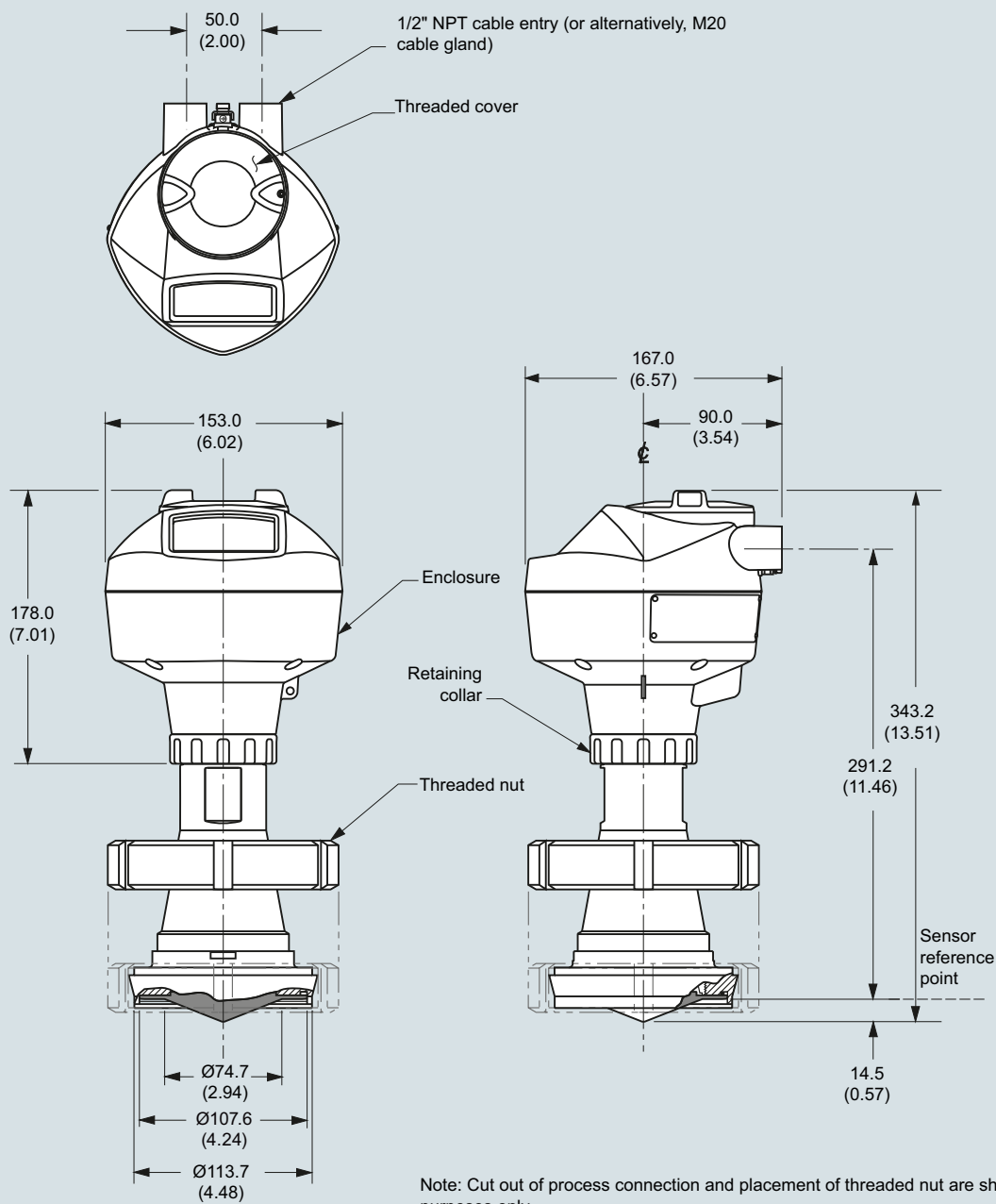
**4**

**SITRANS LR250 Hygienic Encapsulated Antenna**

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-1)

50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

90.0
(3.54)

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining collar

Threaded nut

274.2
(10.80)

225.7
(8.89)

Sensor reference point

Ø44.0
(1.73)

Ø66.9
(2.63)

Ø72.0
(2.83)

11.0
(0.43)

Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-1)



50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

90.0
(3.54)

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining collar

343.4
(13.52)

291.3
(11.47)

Threaded nut

Sensor reference point

Ø74.7
(2.94)

Ø98.9
(3.89)

Ø104.0
(4.09)

14.5
(0.57)

Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.
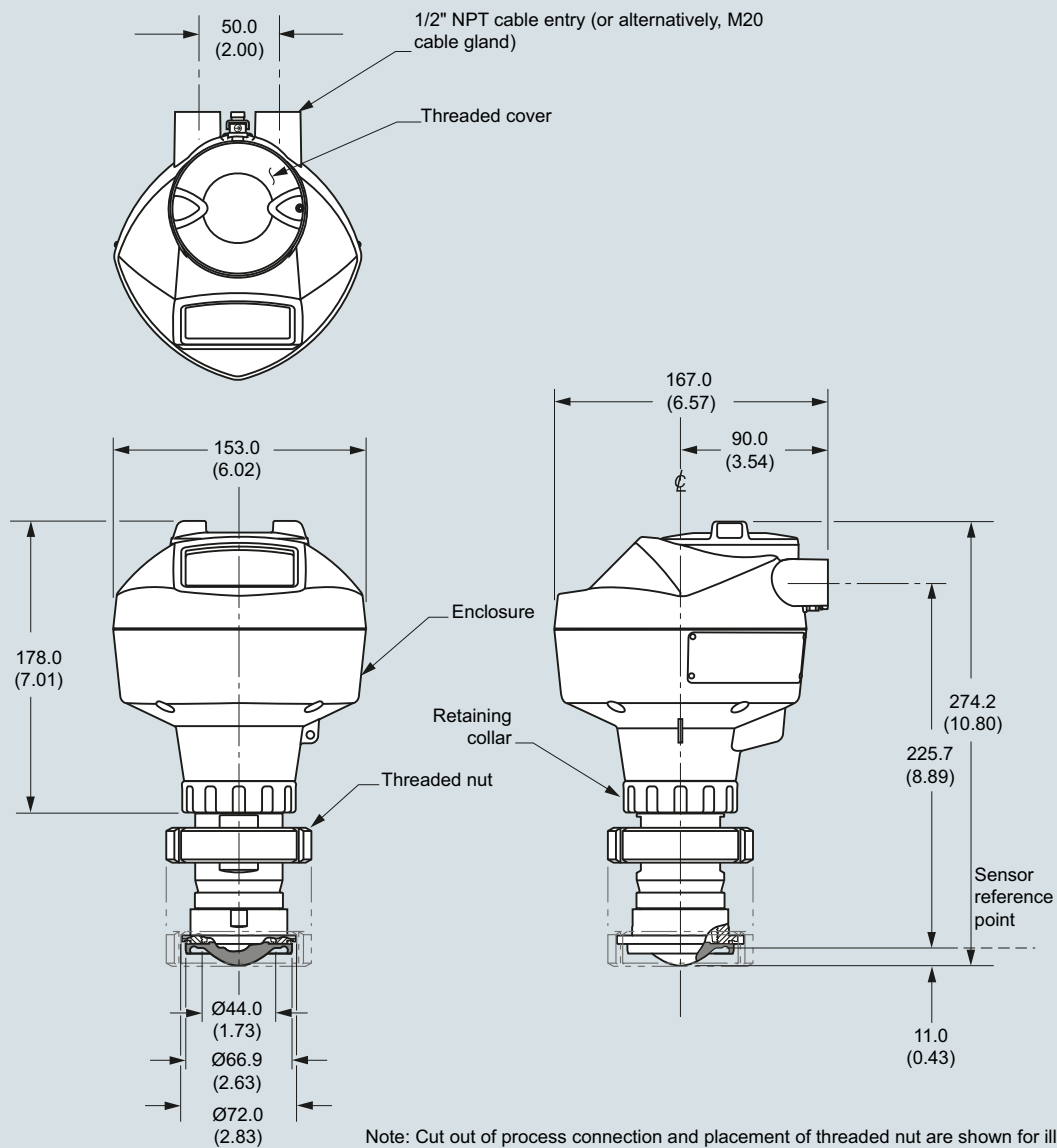
SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

# Level Measurement
## Continuous level measurement
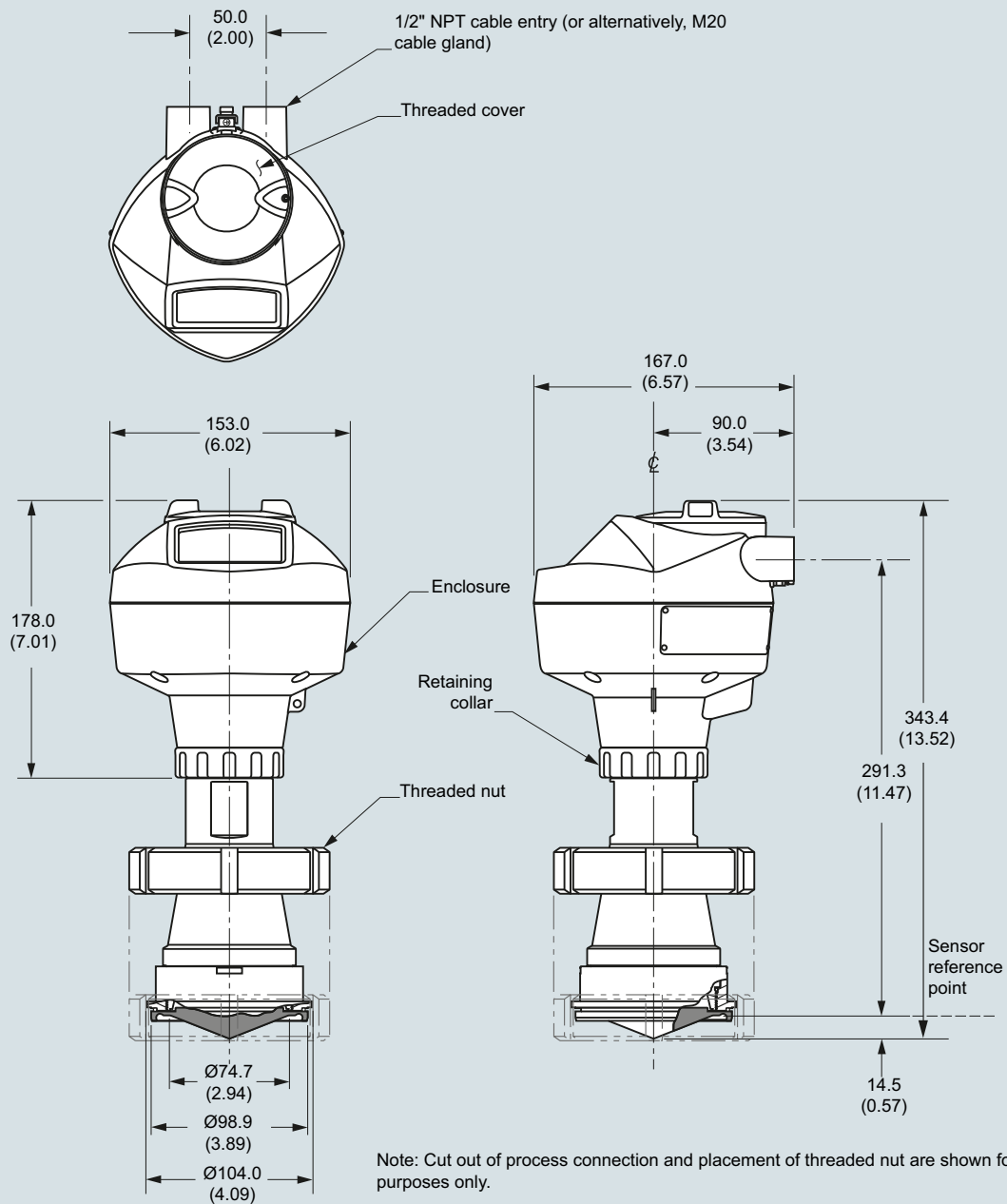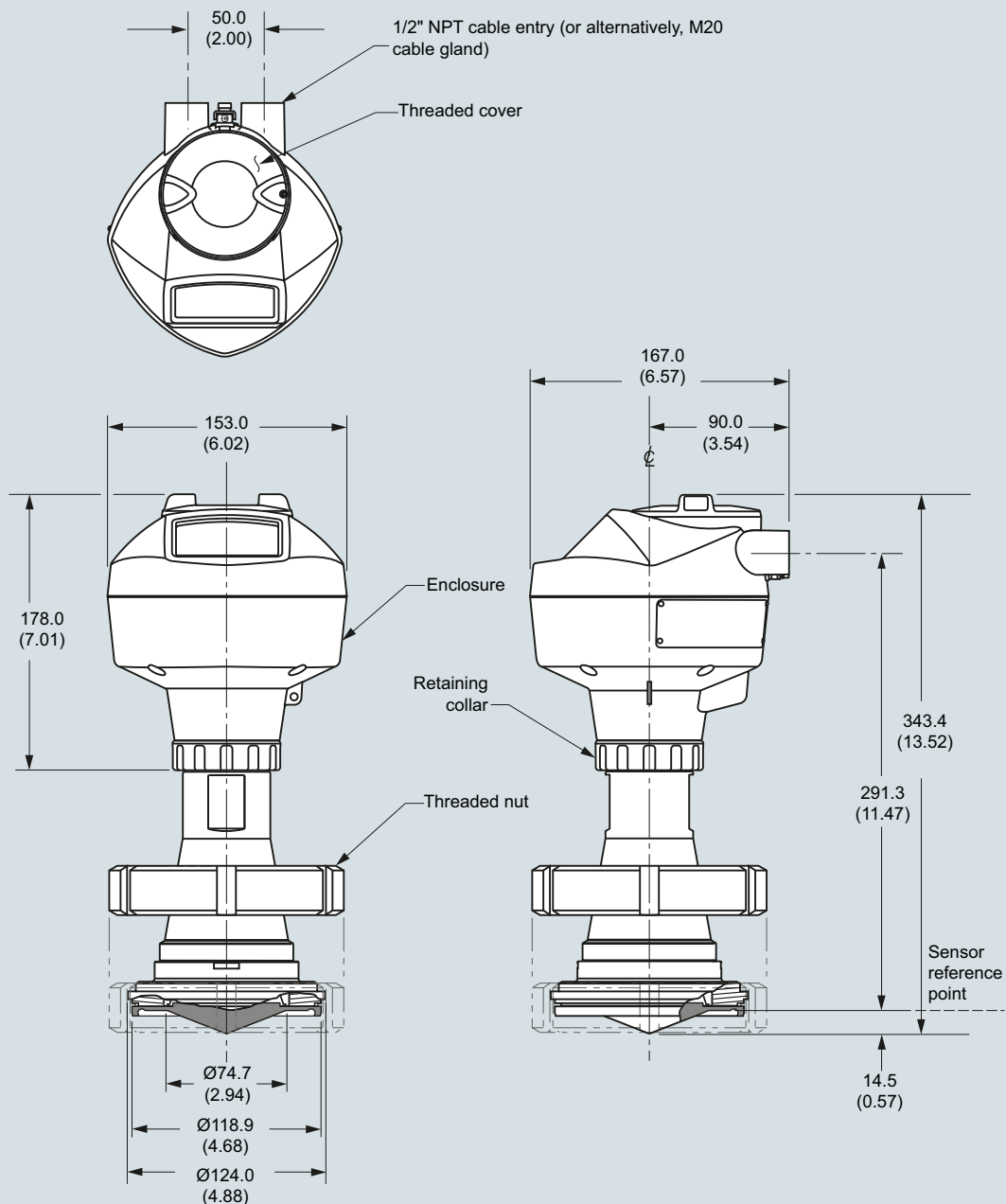## Radar transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna**

Hygienic encapsulated antenna (DN 100 aseptic clamp to DIN 11864-1)

50.0
(2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

153.0
(6.02)

90.0
(3.54)

¢

178.0
(7.01)

Enclosure

Retaining collar

343.4
(13.52)

291.3
(11.47)

Threaded nut

Sensor reference point

Ø74.7
(2.94)

14.5
(0.57)

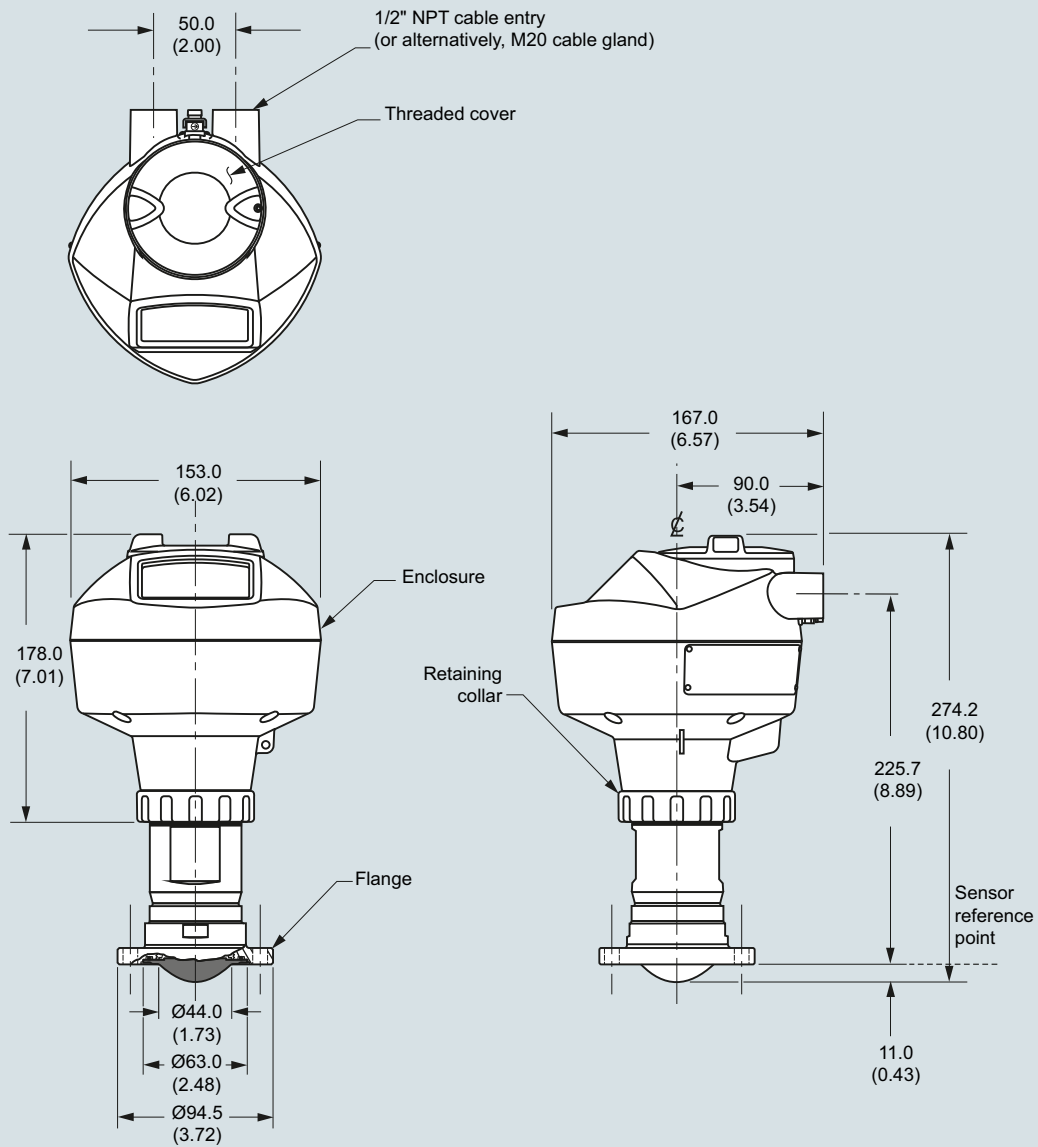Ø118.9
(4.68)

Ø124.0
(4.88)

Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

4

Hygienic encapsulated antenna (DN 50 aseptic flange to DIN 11864-2)



50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining
collar

Flange

Ø44.0
(1.73)

Ø63.0
(2.48)

Ø94.5
(3.72)

167.0
(6.57)

90.0
(3.54)

274.2
(10.80)

225.7
(8.89)

Sensor
reference
point

11.0
(0.43)

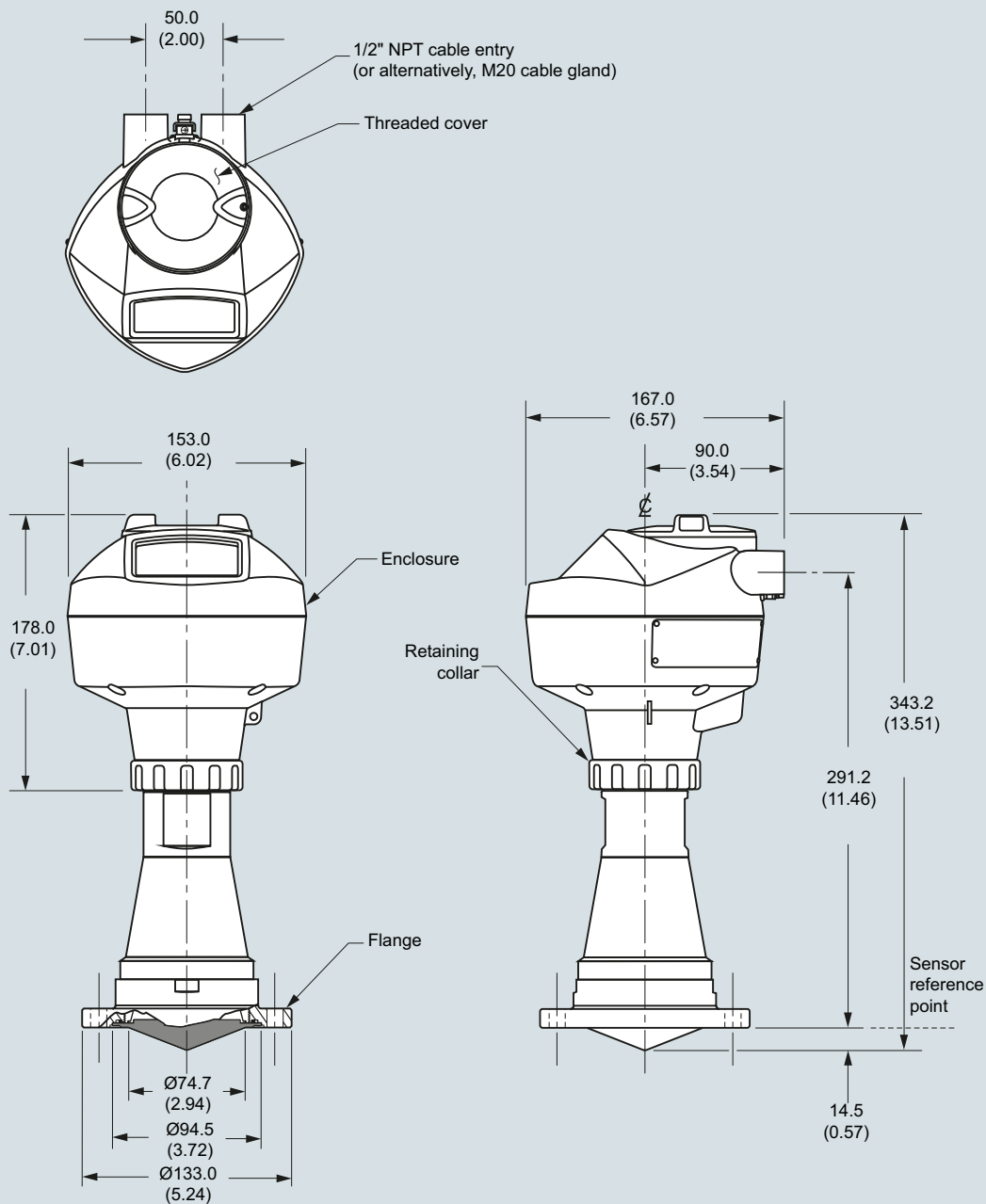Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic flange to DIN 11864-2), dimensions in mm (inch)

## Level Measurement
Continuous level measurement
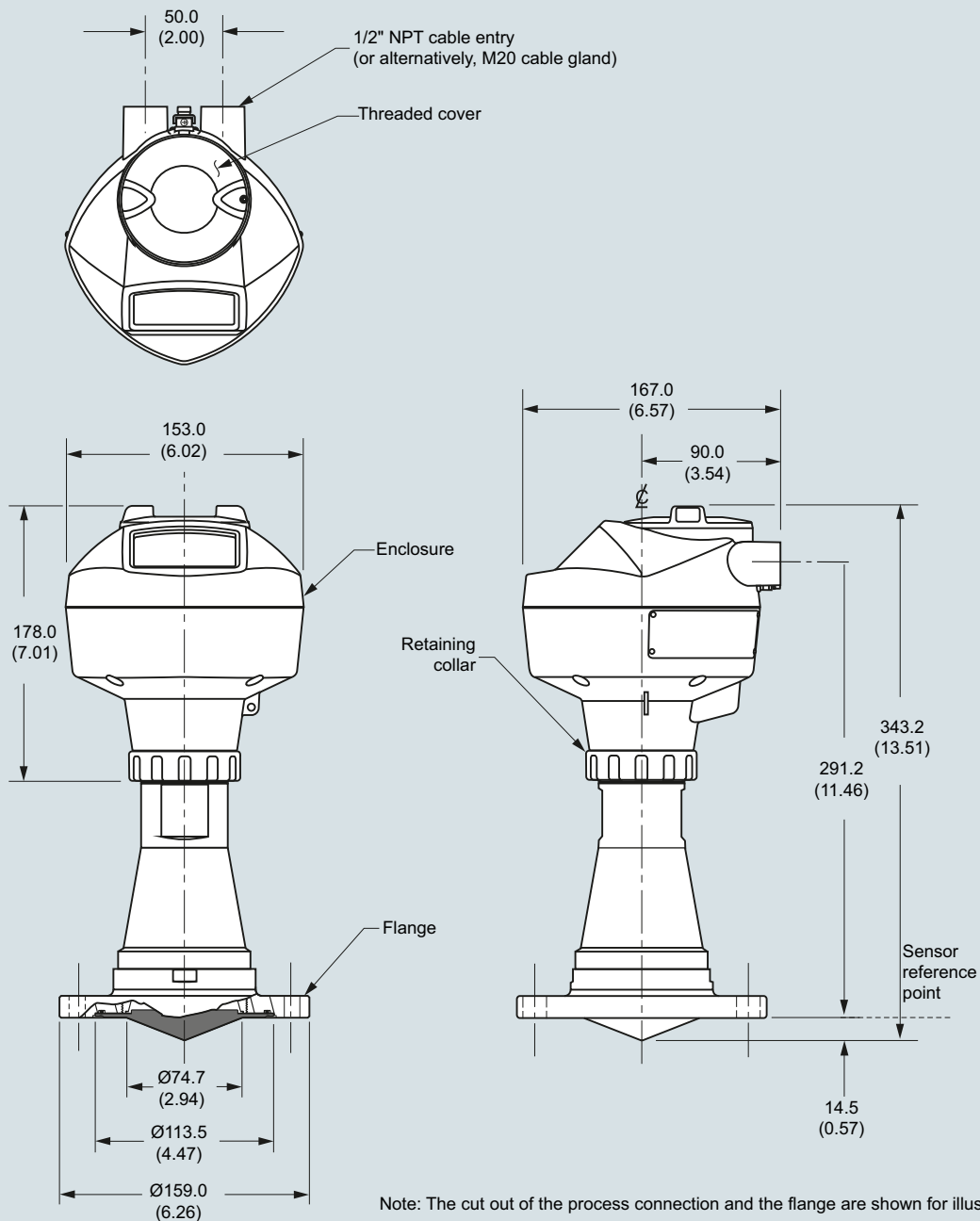Radar transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna**

Hygienic encapsulated antenna (DN 80 aseptic flange to DIN 11864-2)

50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

Enclosure

178.0
(7.01)

167.0
(6.57)

90.0
(3.54)

Retaining
collar

343.2
(13.51)

291.2
(11.46)

Flange

Sensor
reference
point

Ø74.7
(2.94)

Ø94.5
(3.72)

Ø133.0
(5.24)

14.5
(0.57)

Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic flange to DIN 11864-2), dimensions in mm (inch)

Hygienic encapsulated antenna (DN 100 aseptic flange to DIN 11864-2)

50.0 (2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

153.0 (6.02)

167.0 (6.57)

90.0 (3.54)

Enclosure

178.0 (7.01)

Retaining collar

343.2 (13.51)

291.2 (11.46)

Sensor reference point

Flange

Ø74.7 (2.94)

Ø113.5 (4.47)

Ø159.0 (6.26)

14.5 (0.57)

Note: The cut out of the process connection and the flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic flange to DIN 11864-2), dimensions in mm (inch)

## SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-3)

50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

Enclosure

178.0
(7.01)

167.0
(6.57)

90.0
(3.54)

Retaining
collar

273.7
(10.78)

225.2
(8.87)

Sensor
reference
point

Process
connection

Ø44.0
(1.73)

Ø63.0
(2.48)

Ø77.5
(3.05)

11.0
(0.43)

Note: Cut out of process connection is shown for illustration purposes only.
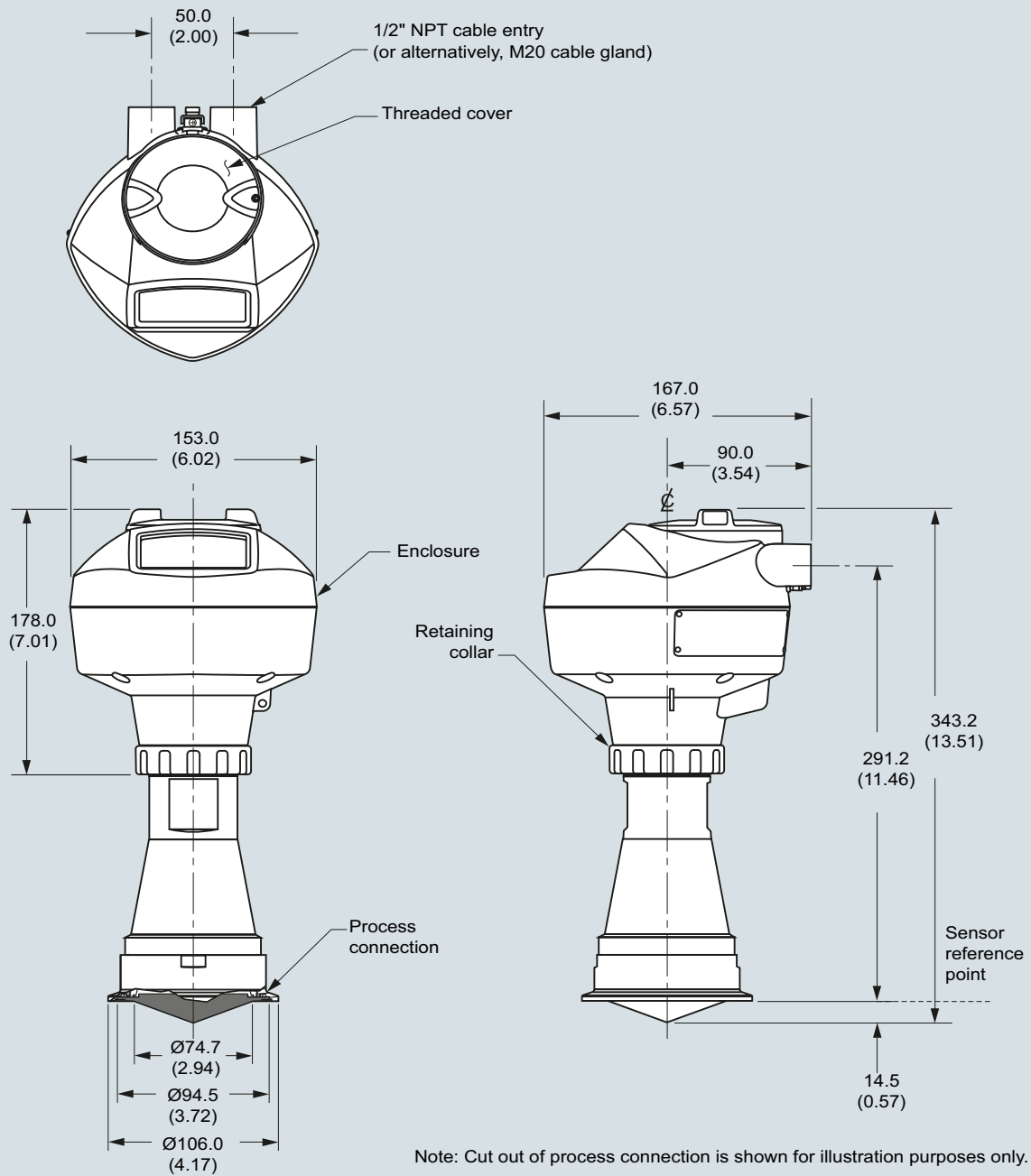
SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-3)
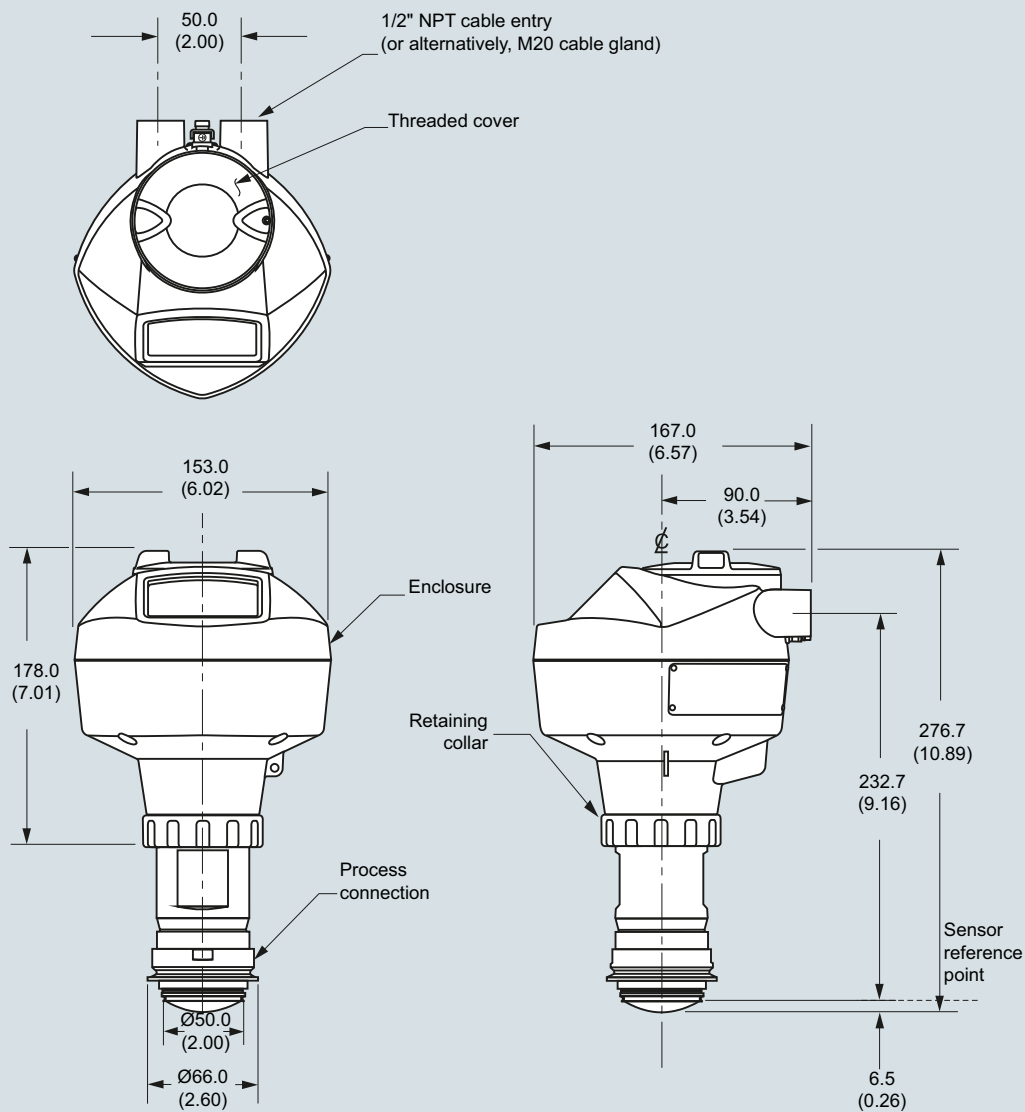
50.0 (2.00)

1/2" NPT cable entry (or alternatively, M20 cable gland)

Threaded cover

167.0 (6.57)

90.0 (3.54)

153.0 (6.02)

Enclosure

178.0 (7.01)

Retaining collar

343.2 (13.51)

291.2 (11.46)

Sensor reference point

Process connection

Ø74.7 (2.94)

Ø94.5 (3.72)

Ø106.0 (4.17)

14.5 (0.57)

Note: Cut out of process connection is shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

Hygienic encapsulated antenna (DN 100 aseptic clamp to DIN 11864-3)

50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

167.0
(6.57)

90.0
(3.54)

153.0
(6.02)

Enclosure

178.0
(7.01)

Retaining
collar

343.2
(13.51)

291.2
(11.46)

Process
connection

Sensor
reference
point

Ø74.7
(2.94)

Ø113.5
(4.47)

Ø130.0
(5.12)

14.5
(0.57)

Note: Cut out of process connection is shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

Hygienic encapsulated antenna (Tuchenhagen Type F, 50 mm)

50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

Enclosure

178.0
(7.01)

Process
connection

Ø50.0
(2.00)

Ø66.0
(2.60)

167.0
(6.57)

90.0
(3.54)

Retaining
collar

276.7
(10.89)

232.7
(9.16)

Sensor
reference
point

6.5
(0.26)

SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type F), dimensions in mm (inch)

4

### SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (Tuchenhagen Type N, 68 mm)

50.0
(2.00)

1/2" NPT cable entry
(or alternatively, M20 cable gland)

Threaded cover

153.0
(6.02)

178.0
(7.01)

Enclosure

Process
connection

Ø 68.0
(2.68)

Ø84.0
(3.31)

167.0
(6.57)

90.0
(3.54)

Retaining
collar

274.2
(10.80)

225.5
(8.88)

Sensor
reference
point

11.2
(0.44)
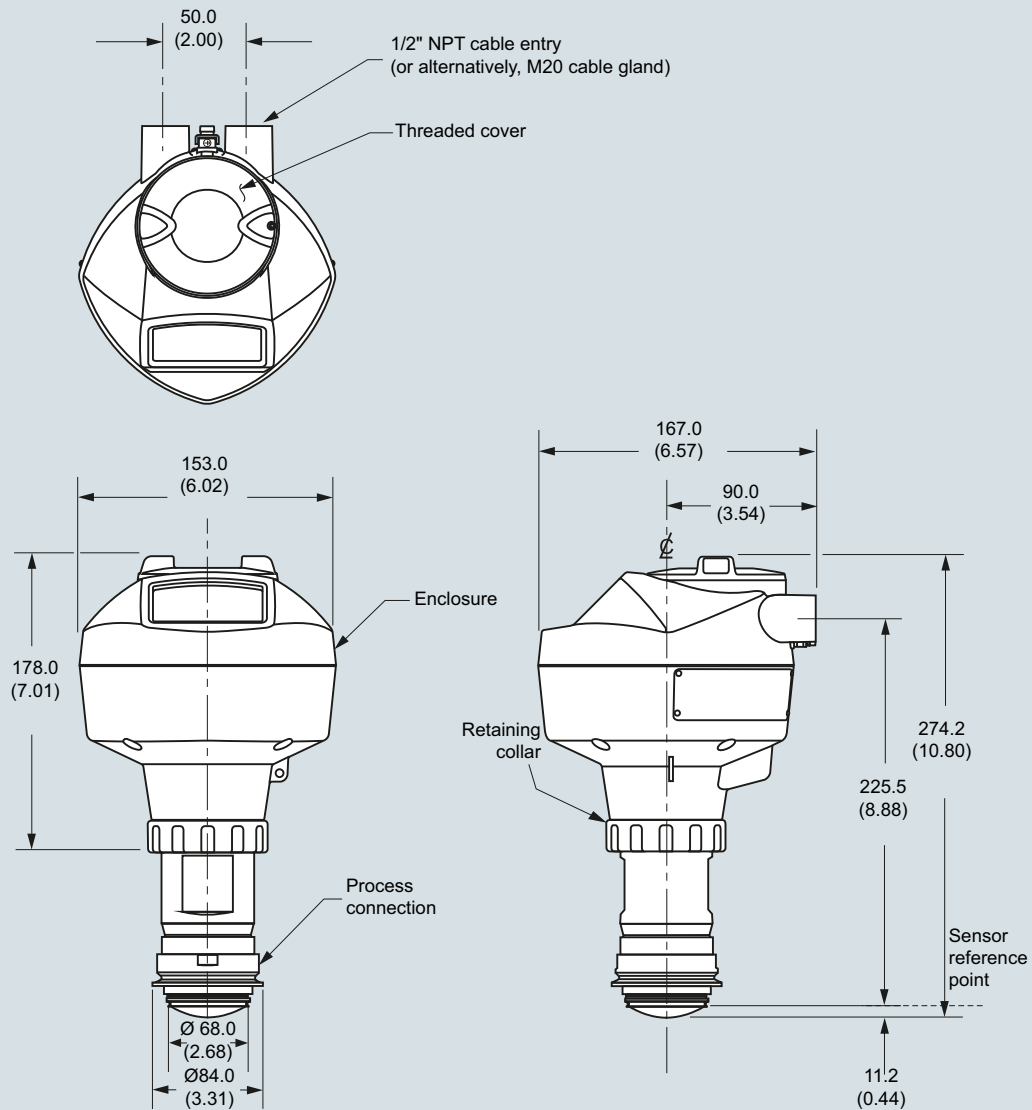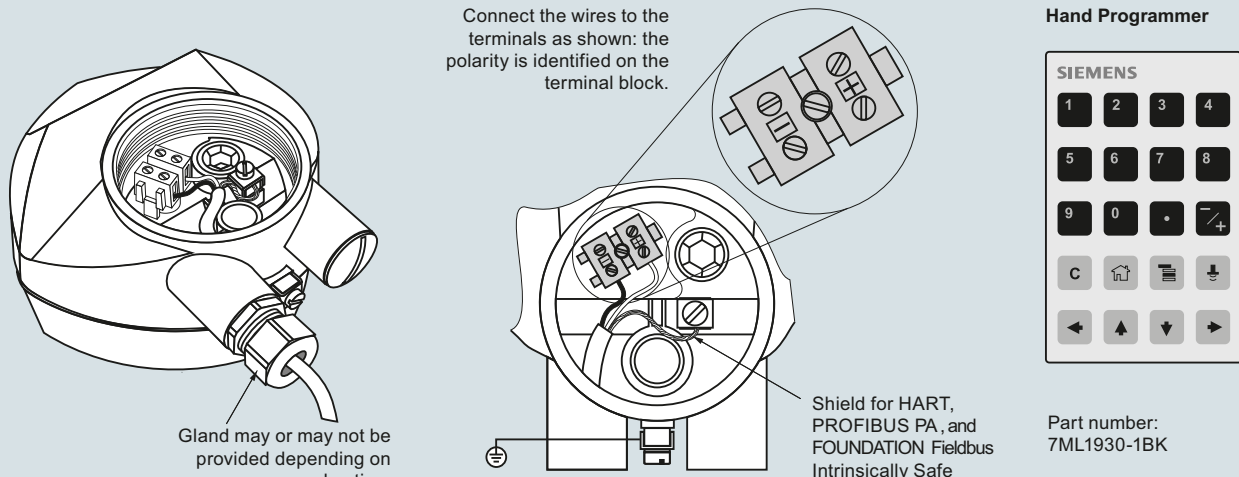
SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type N), dimensions in mm (inch)

4

## Circuit diagrams

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

**Hand Programmer**

Gland may or may not be provided depending on approval option.

Shield for HART, PROFIBUS PA, and FOUNDATION Fieldbus Intrinsically Safe versions only.

Part number:
7ML1930-1BK

**Notes:**
1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.
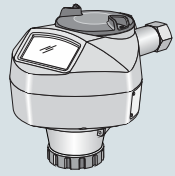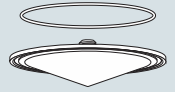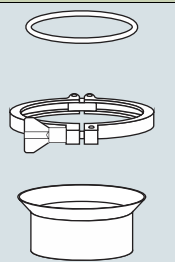
SITRANS LR250 connections

# Level Measurement
Continuous level measurement
Radar transmitters

## SITRANS LR250 Hygienic Encapsulated Specials

### ■ Selection and ordering data

| SITRANS LR250 Hygienic Encapsulated Specials | |
|---|---|
| | Article No. |
| **NOTE:** **LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.** | |
| **For "Electronics Head only" follow the standard configuration and choose YY option on positions 9 and 10 of the full part number.** **For example: 7ML5433-1YY20-1AA0 will order an electronics head for the following:** **EHEDG EL Class 1 approval, 4 ... 20 mA HART, M20 cable entries, General purpose Haz Loc approval, pressure rating as per manual.** | |
| **Spare Lens Kits (Lens and O-ring)** | |
| Kit, 2 inch, ISO 2852, HEA, Lens, silicone secondary O-ring | **A5E32572731** |
| Kit, 3 inch, ISO 2852, HEA, Lens, silicone secondary O-ring | **A5E32572745** |
| Kit, 4 inch, ISO 2852, HEA, Lens, silicone secondary O-ring | **A5E32572747** |
| Kit, DN 50, DIN 11851, HEA, Lens, silicone secondary O-ring | **A5E32572758** |
| Kit, DN 80, DIN 11851, HEA, Lens, silicone secondary O-ring | **A5E32572770** |
| Kit, DN 100, DIN 11851, HEA, Lens, silicone secondary O-ring | **A5E32572772** |
| Kit, DN 50, DIN 11864-1, HEA, Lens, silicone secondary O-ring | **A5E32572773** |
| Kit, DN 80, DIN 11864-1, HEA, Lens, silicone secondary O-ring | **A5E32572779** |
| Kit, DN 100, DIN 11864-1, HEA, Lens, silicone secondary O-ring | **A5E32572782** |
| Kit, DN 50, DIN 11864-2/3, HEA, Lens, silicone secondary O-ring | **A5E32572785** |
| Kit, DN 80, DIN11864-2/3, HEA, Lens, silicone secondary O-ring | **A5E32572790** |
| Kit, DN 100, DIN11864-2/3, HEA, Lens, silicone secondary O-ring | **A5E32572791** |
| Kit, Tuchenhagen, Type F, HEA, Lens, silicone secondary O-ring | **A5E32572794** |
| Kit, Tuchenhagen, Type N, HEA, Lens, silicone secondary O-ring | **A5E32572795** |
| **Accessories (customer side process connection and FKM and EPDM seal for each size and type)** | |
| Kit DN50 DIN11864-1 GS Form A tank connection, EPDM Seal Class II | **A5E32910638** |
| Kit, DN80 DIN11864-1 GS  Form A tank connection, EPDM Seal Class II | **A5E32910649** |
| Kit, DN100 DIN11864-1 GS  Form A tank connection, EPDM Seal Class II | **A5E32910657** |
| Kit DN50 DIN11864-1 GS Form A tank connection, FKM Seal Class I | **A5E32910658** |

| SITRANS LR250 Hygienic Encapsulated Specials | |
|---|---|
| | Article No. |
| Kit, DN80 DIN11864-1 GS  Form A tank connection, FKM Seal Class I | **A5E32910671** |
| Kit, DN100 DIN11864-1 GS  Form A tank connection, FKM Seal Class I | **A5E32910681** |
| Kit 2" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II | **A5E32910686** |
| Kit 3" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II | **A5E32910697** |
| Kit 4" ISO2852 tank connection, Clamp, Cleanable EPDM Seal  Class II | **A5E32910708** |
| Kit 2" ISO2852 tank connection, Clamp, Cleanable FKM Seal | **A5E32910718** |
| Kit 3" ISO2852 tank connection, Clamp, Cleanable FKM Seal | **A5E32910723** |
| Kit 4" ISO2852 tank connection, Clamp, Cleanable FKM Seal | **A5E32910734** |
| Kit DN50 DIN11851 SC Tank connection, EPDM Seal Class II[1] | **A5E32910746** |
| Kit DN80 DIN11851 SC Tank connection, EPDM Seal Class II[1] | **A5E32910771** |
| Kit DN100 DIN11851 SC Tank connection, EPDM Seal Class II[1] | **A5E32910780** |
| Kit DN50 DIN11851 SC Tank connection, FKM Seal Class II | **A5E32910784** |
| Kit DN80 DIN11851 SC Tank connection, FKM Seal Class II | **A5E32910789** |
| Kit DN100 DIN11851 SC Tank connection, FKM Seal Class II | **A5E32910790** |
| Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), EPDM Seal Class II | **A5E32910791** |
| Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II | **A5E32910793** |
| Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II | **A5E32910799** |
| Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), FKM Seal Class I | **A5E32910805** |
| Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I | **A5E32910809** |
| Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I | **A5E32910812** |
| Kit DN50 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II | **A5E32910813** |
| Kit DN80 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II | **A5E32910814** |
| Kit DN100 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II | **A5E32910815** |
| Kit DN50 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I | **A5E32910816** |
| Kit DN80 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I | **A5E32910817** |

| SITRANS LR250 Hygienic Encapsulated Specials | |
| --- | --- |
| | Article No. |
| Kit DN100 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I | **A5E32910818** |
| Kit Type F, Tuchenhagen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection | **A5E33489537** |
| Kit Type N, Tuchenhagen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection | **A5E33489543** |
| Kit Type F, Tuchenhagen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection | **A5E33489828** |
| Kit Type N, Tuchenhagen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection | **A5E33489830** |
| **Ex-proof plugs** | |
| Ex-proof plugs kit, 1/2" NPT, qty 5 | **A5E39979991** |
| Ex-proof plugs kit, M20, qty 5 | **A5E39979992** |

[1] Class II for low fat applications when EPDM seal used on DIN11851

**4**